of living organisms, as manifested, e. g., in their genetic mutations, and especially in their individual behaviour, is the most evident expression of these factors.'

Again: ' The inference seems unavoidable that those special natural factors which we may call vital factors (in contrast with non-vital factors) which have been chiefly responsible for the evolution of living organisms as a sharply distinct class of natural systems are, physically conceived, intra-atomic factors. The directive control so conspicuous in living organisms is to be referred to some feature or features of intra-atomic constitution, determining in some unknown way the direction and time of quantum transfer. . . . Many of the most characteristic peculiarities [of organisms], such as the progressive inner differentiation during ontogeny, the fine-grained character of nuclear and protoplasmic structures, the asymmetrical nature of many metabolic reactions, the spontaneity and selectivity of behaviour in the organism as a whole, all point to the conclusion that their fundamental organization is different in kind from that of non-living systems. Our present hypothesis is simply that this organization is one in which the intra-atomic factors become important and individually effective in determining and directing the activities of the whole system. The characteristic vital (as distinguished from inorganic or non-vital) organization would then be one in which the intra-atomic forces are unified, directed, and amplified in such a way as to produce a special and

distinctive type of behaviour, separating these organisms sharply from the great body of non-living systems in which the causation is of the large-scale or statistical type/

Lillie's most definite suggestion as to the mode of